RMRS

Rocky Mountain
Remediation Services, L.L.C

protecting the environment

Building 123 Decommissioning Project

Health and Safety Plan

Rocky Mountain Remediation Services, L. L. C.

Document Number
RF/RMRS-97-022#48

REVISION 0

JUNE 1997

BUILDING 123 DECOMMISSIONING PROJECT
HEALTH AND SAFETY PLAN

REVISION 0

JUNE 1997

This Health and Safety Plan has been reviewed and approved by

Doug Steffen, Project Manager — Date: 6/11/97

Ken Jenkins, Industrial Hygiene & Safety Lead — Date: 6/09/97

This Health and Safety Plan was principally prepared by

Tonya Sangaline, Industrial Hygiene & Safety — Date: 6-10-97

TABLE OF CONTENTS

TABLE OF CONTENTS

FIGURES

APPENDIX

ACRONYMS

AHA	Activity Hazard Analysis
D&D	Decontamination and Decommissioning
DOE	U S Department of Energy
ESH&Q	Environmental, Safety, Health, and Quality
HASP	Health and Safety Plan
HAZCOM	Hazard Communication Standard
HSP	Health and Safety Practices
IH&S	Industrial Health and Safety
IWCP	Integrated Work Control Program
MMF	Man-Made Fibers
MSDS	Material Safety Data Sheet
NIOSH	National Institute of Occupational Safety and Health
OSHA	Occupational Safety and Health Act
PCB	Polychlorinated Biphenyls
PHA	Pre-Construction Preliminary Hazard Analysis
PPE	Personal Protective Equipment
RCM	Radiological Control Manual
RCT	Radiological Control Technicians
RFETS	Rocky Flats Environmental Technology Site
RMRS	Rocky Mountain Remediation Services, LLC
RWP	Radiological Work Permit
WBS	Work Breakdown Structure

1.0 INTRODUCTION

1.1 SCOPE AND APPLICABILITY

The purpose of this Health and Safety Plan (HASP) is to identify, mitigate, and eliminate potential safety and health hazards associated with decommissioning activities during the Building 123 Cluster Decommissioning Project Procedures and controls will be identified in this HASP that will help prevent and reduce the risk of personnel injury and/or illness and property and/or environmental damage impacts This HASP is applicable to all decommissioning related activities performed on Building 123 and its supporting facilities Major activities include, but are not limited to

- Sampling, characterization, and removal of chemical, hazardous, and radiological materials and waste
- Associated equipment and utilities removal
- Major decontamination activities
- Building and structure dismantlement
- Remediation of contaminated soil and buried process waste lines

Rocky Mountain Remediation Services, L L C (RMRS) and its subcontractors will utilize the RMRS Safety Plan, subcontractor safety plans, 1-C18-HSP 24 01, Contract Section 01700, the U S Department of Energy (DOE) Handbook for Occupational Health & Safety during Hazardous Waste Activities, DOE Orders 5480 9a and 440 1, and the Site Health and Safety Practices (HSP) Manual as the upper tier documents to govern health and safety of the workers during the decommissioning process Occupational Safety and Health Act (OSHA) Standards 29 CFR 1910 and 1926 will be utilized in conjunction with other approved company and subtier specific documents to ensure worker protection and safety From a radiological standpoint, the DOE Radiological Controls Manual (RCM), 10 CFR 835, and the Rocky Flats Environmental Technology Site (RFETS) site-specific RCM will be utilized for worker radiological safety

No task will be performed in support of this project until an Activity Hazard Analysis (AHA) (See Appendix 1) has been written and approved that addresses the task or activity The AHA will identify the principal steps involved and the sequence of work activities, the potential safety and health hazards associated with each step, the specific controls associated with each potential hazard, the task specific special equipment to be used in performing the activity, and monitoring requirements

1 2 LOCATION

Building 123 is located in the RFETS industrial area at the east central portion of the Site as displayed on Figure 1-1, Site Map It sits in the area enclosed by the intersections of Central and Cottonwood Avenues with Third and Fourth Streets

1 3 PHYSICAL LAYOUT AND DIMENSIONS

The building is a u-shaped structure with the front portion facing north along Central Avenue Its east wing runs parallel to Fourth Street and its west wing runs parallel to Third Street The plan view of the building is shown in Figure 1-2, Plan View of Building 123 It is a single story, concrete masonry unit structure enclosing an area of 19,000 square feet The front of the building is 150 feet long, the east wing is 200 feet long, and the west wing is 145 feet long The north and west sections are 40 feet wide and the east wing is 50 feet wide The average height of the roof, above ground level, is approximately 20 feet

FIGURE 1-1
RFETS SITE MAP

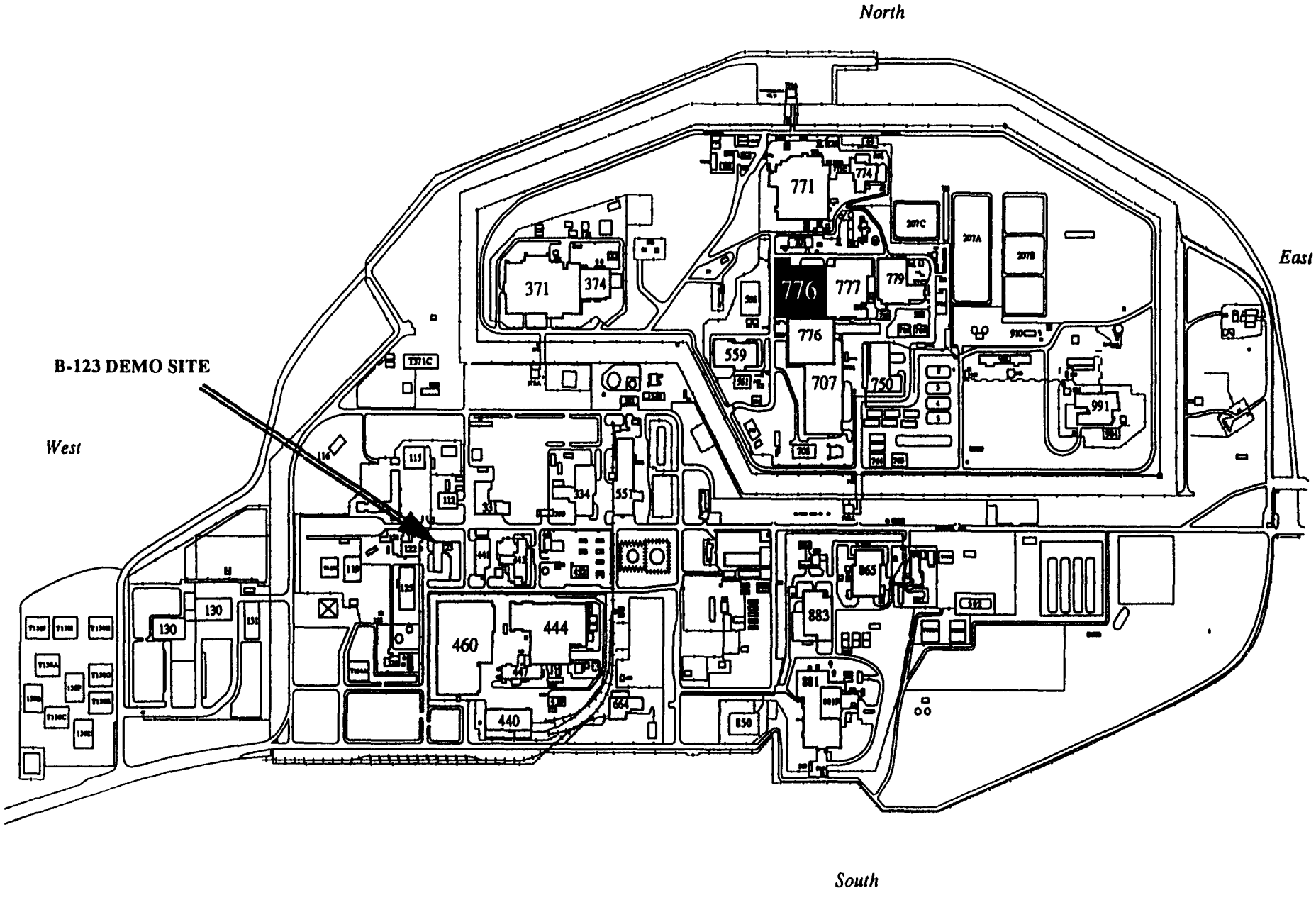
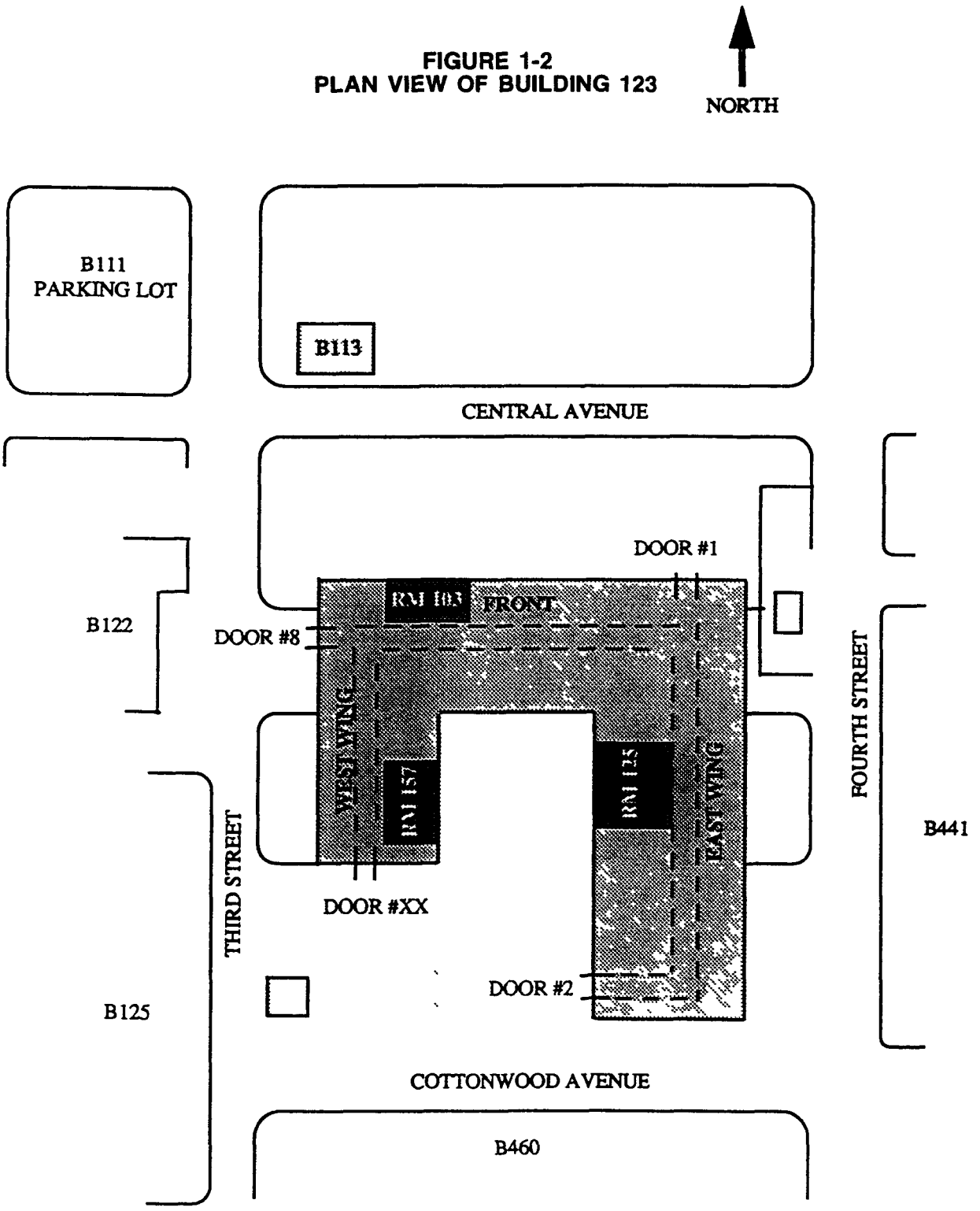


FIGURE 1-2
PLAN VIEW OF BUILDING 123



Corridors run through the middle of the front structure and each wing Laboratories and offices are located on either side of the corridors There are 15 laboratories and 30 offices within the structure

1 4 OPERATIONAL HISTORY

The original structure consisted of the building along Central Avenue and Fourth Street It was built in 1952 The west wing was added in 1972 and the computer room was built in 1974 The facility was used as a bioassay laboratory and a dosimetry counting and distribution facility It also contained offices for radiation health specialists, storage of all radiological health records, a laboratory for calibration and repair of criticality alarms, and a variety of other repair and calibration shops

1 5 HEALTH AND SAFETY PROGRAM OBJECTIVES

RMRS is committed to providing a working environment for its employees and its subcontractors that is safe, healthy, productive, and compliant with and federal and state laws and regulations Meeting this commitment will be contingent on RMRS and its subcontractors effectively managing safety and workers who possess the ability and the motivation to identify and mitigate hazards in the workplace Attaining excellence in execution will require

Planning - preparing a hazard analysis for the work place and the integration of a formal mechanism of hazard reduction during the early phases and throughout the life cycle of the project

Establishing Priorities - allowing for the appropriate allocation of resources focused primarily on the control of high and moderate probability and consequence hazards

Accountability - establishing meaningful performance metrics to measure progress

Enforcement - understanding that less acceptable safety performance carries a cost and exemplary performance will be rewarded

The implementation of this philosophy will begin with the subcontractor preparing a project specific safety and health plan which will comply with this document from the implementation phase until the project close out phase In conjunction with this, work packages will be written in accordance with the Integrated Work Control Program (IWCP) The sub-contractor will include an AHA for discrete tasks which analyze potential hazards and determine appropriate control measures The overriding objective of this plan and the supporting subcontractor Health and Safety Plan is to minimize unsafe behaviors and conditions that can result in injuries and noncompliance

1 6 HEALTH AND SAFETY PLAN DEVELOPMENT

All RMRS subcontractors must implement the following elements when developing their Health and Safety Plan

- Hold all personnel accountable for implementation of the safety program This is the only way to aggressively and successfully implement a safety program
- Establish definitive expectations and objectives for all levels of management, supervision, and craft This includes performance milestones and encouraging personnel to take an active role in implementation of the health and safety program
- Secure employee participation It is imperative to ensure employee buy-in when implementing a safety program Engaging workers and securing their buy-in is critical to project success RMRS and subcontractors will encourage full participation in the safety program At a minimum, this will include involvement in safety committees, training, and pre-evolution briefings
- Provide line management with competent and consistent technical support The

subcontractor designated safety representative(s) will serve as the safety technical representative and advisor for line management and supervision Implied with this role is the assurance that the safety representative develop and maintain a close working relationship with supervision to ensure a detailed understanding of the job task and the subsequent health and safety requirements

Pre-construction preliminary hazard analysis (PHA) - The PHA will identify project hazards early in the planning stages of the project This analysis ensures that the subcontractor has determined the major phases and hazards of the project and evaluated preliminary mitigating measures At a minimum this preliminary hazard analysis will include

1 The anticipated construction phases involved in the project

2 The types of hazards associated with each anticipated construction phase including safety and health control measures necessary to protect employees and others at the construction project or activity

3 Phases of the construction project for which DOE Orders, OSHA standards, HSPs, or subcontractor specification documents require that protective measures be designed, inspected or approved by a Professional Engineer or other qualified competent person

Task Specific Activity Hazard Analysis (AHA) - Potential hazards are to be identified in parallel with the construction, remediation, or industrial methods selected for each work package When developing the AHA, it is recommended that OSHA publication 3071 be used as a guideline Normally the AHA will include the following

1 Identification of all specific potential hazards including the identification of any hazardous chemicals used in work activities

2 Actual corrective measures planned to control or mitigate identified hazards

3 Drawings and/or other documentation for protective measures, DOE Orders, OSHA standards, Site HSPs or subcontractor specification documents

1 7 SAFETY PLAN KEY ELEMENTS

As the subcontractor develops their health and safety plan, certain key elements must be considered The subcontractor shall review the applicable federal, state, and site-specific safety documents prior to developing their project specific health and safety plan At a minimum, the following project related references shall be reviewed

- DOE Order 5480 9A, Construction Project Safety and Health Management
- DOE Order 440 1, Worker Protection Management for DOE Contractor Employees
- RFETS Health and Safety Practices Manual
- DOE Handbook for Occupational Health and Safety during Hazardous Waste Activities
- 29 CFR Part 1926, Safety and Health Regulations for Construction
- 29 CFR Part 1910, Safety and Health Regulations for General Industry
- 1-C18-HSP-24 01, Construction Health and Safety Requirements
- Section 01700, Subcontractor Safety and Health Requirements

At a minimum, the subcontractor shall utilize the following outline when developing a Health and

Safety Plan

Introduction

Construction Project Overview
Scope of Work Summary
Specific Task Description

Subcontractor Project Organization and Responsibilities

Project Manager
Site Superintendent
Site Safety and Health Officer
Project Personnel
Subcontractor EH&S Manager
Contractor Construction Coordinator

Orientation and Training

Site Specific Safety and Health Orientation
Safety and Health Training Requirements
Employee Task Training
Worksite Access Training (as required)

Personal Protective Equipment

Site Specific PPE Requirements

Exposure Monitoring

Environmental Monitoring
Noise Monitoring

Medical Surveillance (as required)

Hazard Analysis

Preliminary Hazard Analysis
Activity Hazard Analysis
Daily Jobsite Hazards/Deficiencies Inspections
Weekly Formal Jobsite Safety and Health Inspections
Construction Site Specific Hazards
Accident/Incident Investigations Lessons Learned

General Safety Requirements

Control of Construction Site Access

Construction Project Bulletin Board

Required Postings
Emergency Numbers

Sanitation

Potable Water
Portalets
Showers/Washing Stations (as required)

Emergency Response

Employee Injury or Illness
Emergency Equipment
Emergency Evacuation
Unusual Conditions
Accident/Incident Reporting

Spill Control

Chemical Spills

Recordkeeping Requirements

Orientation and Training
Weekly Safety Meetings
General
Injury and Illness
Medical Records

Post Construction Activities

Signature and Approval Page

Required Appendices or Tables

1.8 SUBCONTRACTOR AND THIRD TIER WORK

If the RMRS prime subcontractor elects to utilize subcontractors to perform any designated work task, the prime subcontractor is obligated to inform each subcontractor of all health and safety hazards which may be related to any work performed under their contract As a means of meeting this obligation, RMRS and/or the prime subcontractor project management will make available to each lower-tier subcontractor a copy of this program and any supporting health and safety plans With RMRS and prime subcontractor approvals, subcontractors will be required to develop their own health and safety plans

1.9 PROGRAM AVAILABILITY

A copy of the prime subcontractor health and safety plan will be available at each project field location The health and safety plan will also be available upon request to all employees, subcontractor representatives, union representatives, and regulatory agencies having authority over the project

1 10 COMPETENT PERSON

The prime subcontractor and its subcontractors must ensure that they have an OSHA defined competent person onsite This person must be must be identified by name in the subcontractor HASP and be at the job site the entire time the activity requiring a competent person is being performed Competent persons cannot be changed without the Projects Manager's written approval Additionally, the subcontractor must provide a full-time safety professional This person and shall be approved in writing by the RMRS Project Manager

OSHA defines a competent person as someone who, by reason of education, training and experience is capable of identifying existing and predictable hazards in the work area, conditions which are unsanitary, hazardous, or dangerous to employees, and who has authorization to take prompt and corrective measures to eliminate them

OSHA construction standards that require a competent person include but is not limited to

Accident Prevention Responsibility	Asbestos
Compressed Air	Cranes, Derricks, and Hoists
Electrical	Excavation and Trenching
Fall Protection	Ionizing Radiation
Hearing Protection	Lead
Ladders	Respiratory Protection
Requirements for Lift Slab Operations	Scaffolding
Slings	Welding and Cutting

Underground Construction Demolition Operations

2.0 PROJECT DESCRIPTION

2 1 GOALS

The goal of this project is to safely remove the above-ground structure, to minimize the generation of waste, and to decommission Building 123 as specified in the Rocky Flats Cleanup Agreement This is in keeping with the ten year plan and is the interim action of the 125/441 cluster decommissioning effort The Work Breakdown Structure (WBS) element that will be completed as a result of this effort is 1 1 5 02 04 03

2 2 PREREQUISITES BY OTHERS

The tasks that are assumed to be completed prior to the start of the decommissioning project and are not considered part of the project are described below

- Move tenants, furniture, and unattached, non-contaminated equipment out of the building
- Collect all excess hazardous materials and transfer to subcontractor
- Move all classified documents and materials

2 3 DECOMMISSIONING SCOPE

Scope and basis of the estimate at Level 7 of the WBS is discussed below

- Planning and Engineering - Preparation of the performance cost, schedule, and technical performance baselines and the development of the IWCP packages for all decommissioning work
- Characterization - Radiological Characterization will require about 20 measurements per room (60 rooms) Hazardous material characterization is required Asbestos abatement is also required
- Site Preparation - Site preparation includes relocation of building occupants, asbestos identification and removal, and relocation of the LAN line
- Decontamination - Preliminary investigations indicate that the building should contain no contamination above background levels However, appropriate monitoring will be conducted during decommissioning activities to verify expected contaminant levels

- Dismantlement - Piping or exhaust systems within the building will be dismantled prior to building demolition should characterization reveal levels of contamination which would render general demolition impractical Otherwise, the systems will be demolished with the rest of the building Systems that will be investigated are exhaust hoods and duct work and the overhead process waste system

- Demolition - The building will be demolished using methods very similar to those utilized on Building 889 Mobile demolition equipment, typically consisting of an excavator equipped with a shear and/or bucket, bucket loaders and dump trucks will be required Salvageable metal material will be separated from the demolition rubble Consideration will be given to stock piling the concrete rubble for reuse as material for the environmental cap or other environmental construction as a cost savings effort

- Support Services - This element provides for procurement, security, environmental, maintenance, and building operations support required to execute the project It also includes time spent by personnel to accomplish medical and training requirements Expendable supplies, personal protective equipment (PPE), and small tools for project execution are provided by this element

3.0 ORGANIZATION/HEALTH AND SAFETY RESPONSIBILITIES

3 1 PROJECT MANAGER

The Project Manager is responsible for overall management and compliance with federal, state, and local health and safety requirements and RMRS and its subcontractor's policies, plans and procedures for this project The Project Manager must ensure that adequate resources are available to provide a safe workplace for all project personnel

3.2 DECOMMISSIONING CONSTRUCTION SUPERINTENDENT

The Decommissioning Construction Superintendent is responsible for implementation and compliance with all applicable health and safety requirements, including this HASP The Construction Superintendent or designee is responsible for reviewing and approving all AHAs

3.3 ENVIRONMENTAL, SAFETY, HEALTH, AND QUALITY (ESH&Q) ORGANIZATION

ESH&Q Director - is responsible for assigning a project Health and Safety Representative or designee

Project Health and Safety Officer - shall review and approve all AHAs Shall provide field safety oversight during the project Shall assist the project manager in any safety investigations

IH&S Lead (or designee) - is responsible for verifying compliance with all applicable safety and health requirements, and coordinating all required health and safety monitoring and sampling The IH&S lead or designee is also responsible for the development of the HASP, assisting with development of AHAs and providing technical guidance with respect to all applicable health and safety requirements

3 4 RADIOLOGICAL CONTROL ORGANIZATION

Radiological Control Manager - is responsible for the overall implementation of the Site radiological control program

Radiological Operations Foreman - provides supervision of Radiological Control Technicians (RCTs) and ensure compliance with the Radiological Work Permit (RWP) and applicable procedures Implements and ensures completion of Radiological Surveys, as required to support the project's schedule

RCTs - provide radiological monitoring for personnel exposure hazards Performs pre-job and other radiological surveys Ensures compliance to the RWP and ensures appropriate actions are taken in response to radiological emergencies or contamination events

Radiological Engineering - defines the engineering, administrative, and work activity controls for identified radiological hazards Defines PPE requirements for radiological hazards Defines requirements for the release of property or materials according to HSP 18 10 and Radiological Operating Instruction 3 02

3.5 CRAFT FOREMAN/FIELD ENGINEER

Supervises the activities of craft personnel Conducts pre-evaluation job briefings, assists in AHA development, briefings, and performs/assists in site-specific HASP training, as necessary

3 6 SITE WORKERS

Complies with HASP, AHAs, and applicable RFETS practices, procedures, and policies Reports any accidents, injuries, or near misses immediately to the Craft Foreman/Field Engineer Assists with development of AHAs

3 7 VISITORS

Visitors entering the work area during field activities will receive a briefing on the requirements of this HASP In addition, visitors must have received General Employee Radiological Training, wear dosimetry and other PPE, as required by the RWP, HASP, and AHAs Normally, visitors will not perform hands on work activities Training for visitors shall be commensurate with the areas being visited and meet the requirements of the Site RCM, Article 622 or 657

Visitors who enter any area where they may be exposed to hazards must be trained on the requirements of this HASP Visitors who enter the work area or sign in under the RWP, who do not meet the minimum training requirements shall not be permitted to perform hands-on work and must be escorted by a site worker who meets minimum training requirements

4 0 HEALTH AND SAFETY HAZARD ASSESSMENT

4 1 POTENTIAL HEALTH AND SAFETY HAZARDS

During the initial planning stages for the Decontamination and Decommissioning (D&D) of 123, a Job Hazard Analysis Overview was conducted in accordance with 1-C18-HSP-24 01 to evaluate the potential health and safety hazards for the project (Reference Figure 4-1 to review this analysis)

The PHA for this project will include an evaluation of the types of hazards associated with each phase of the project Potential health hazards could include lead, asbestos, radioactive materials, acids or other hazardous materials, and/ or chemicals Other potential hazards may include hoisting and rigging, scaffolding usage, lockout/ tagout concerns, fall protection issues and confined space entries Due to the potential hazardous materials and chemical exposure to the workers, characterization of asbestos, lead, acids, polychlorinated biphenyls (PCBs), uranium, plutonium, and radioactive contaminants will be accomplished in accordance with approved Building 123 Reconnaissance Level Characterization survey plans and site procedures Examples of some of the hazards in the facility are

1 Asbestos containing material in floor tile, wall board and pipe insulation

2 Chemicals, acids, and solvents in various laboratories

Additionally, characterization for presently unidentified hazards will be performed as they are identified

4 2 PROTECTIVE CONTROL MEASURES

Control methods will be specified for all identified hazards for each principal step listed in the AHA These control methods could include engineering controls, administrative controls, and PPE

FIGURE 4-1
PRELIMINARY HAZARD ANALYSIS OVERVIEW
BUILDING 123 DISMANTLEMENT AND DECOMMISSIONING

PLANNING PHASE

MAJOR WORK TASK	HAZARD	CAUSE	PREVENTATIVE MEASURES
Perform building walkdowns to identify IWCP work steps	Tripping, falling, noise hazards, exposure to chemicals, hazardous substances and /or radioactive materials	No planning, lack of communication, improper use of RWPs, not following room or building instructions	• Develop AHA's • Conduct pre-evolution briefings • Follow building instructions • Ensure personnel have been properly trained before entry
Move office equipment and furniture to prepare for D&D activities	Back strains, pinch points, extremity injuries due to falling objects or moving vehicles	Improper lifting of equipment, careless handling of equipment, improper planning and walkdowns, no continuing observations or use of the buddy system	• Proper training • Use of the buddy system • Proper use of forklifts and trucks including operating alarm systems and brakes • Conduct planning meetings and briefings • Proper use of AHA and PPE
Perform hazard analysis characterization activities, including asbestos, beryllium, chemical, lead and radiological sampling	Overexposure, inhalation, absorption, eye and skin irritation	Improperly or not using prescribed PPE, lack of proper planning, not following sampling procedures correctly, improper transport or handling of samples	• Prepare and implement AHA for job task • Wear prescribed PPE • Conduct planning meetings and briefings • Follow all building instructions for sampling • Utilize all procedures and sampling protocols properly • Ensure all sampling personnel are in the proper medical surveillance programs • Ensure all required training has been completed

FIGURE 4-1
PRELIMINARY HAZARD ANALYSIS OVERVIEW
BUILDING 123 DISMANTLEMENT AND DECOMMISSIONING

ABATEMENT PHASE - ASBESTOS/LEAD

MAJOR WORK TASK	HAZARD	CAUSE	PREVENTIVE MEASURES
Perform asbestos abatement and clean- up activities	Exposure to asbestos airborne and surface contamination fibers	Improper clean up techniques including improper tent, decontamination or PPE usage, improper ventilation, or improper waste handling/disposal	• Use certified state abatement inspector to plan and supervise the abatement project • Ensure all workers are trained as asbestos workers • Ensure all RFETS asbestos/lead prerequisites are met prior to job commencing • Develop and implement an AHA(s) for job • Ensure all medical, training, and PPE prerequisites are met • Ensure proper air monitoring is performed during the course of the job by IH&S personnel • Ensure all posting and clearance sampling is performed
Work with lead containing materials	Exposure to lead material		

FIGURE 4-1
PRELIMINARY HAZARD ANALYSIS OVERVIEW
BUILDING 123 DISMANTLEMENT AND DECOMMISSIONING

ABATEMENT PHASE - RADIOLOGICAL

MAJOR WORK TASK	HAZARD	CAUSE	PREVENTATIVE MEASURES
Perform radiological decontamination operations	Exposure to radioactive materials internally and externally Cell damage and damage to internal body organs can occur with over exposures to radioactive materials Improper use of scabbling or other decontamination equipment can injure extremity or other limbs of workers by causing gash or cutting wounds	Improper clean up techniques including Improper tent, decontamination or PPE usage Improper ventilation Improper waste disposal and handling Lack of or improper training in the proper use of decontamination equipment	• Ensure all workers are trained as rad workers • Ensure all RFETS rad prerequisites are met prior to job commencing • Develop and implement an AHA(s) for the job • Ensure all medical, equipment training and PPE requirements are met • Ensure the proper air and smear monitoring sampling is performed • Follow the Radiation Work Permit instructions (RWP)

FIGURE 4-1
PRELIMINARY HAZARD ANALYSIS OVERVIEW
BUILDING 123 DISMANTLEMENT AND DECOMMISSIONING

DISMANTLEMENT & DECOMMISSIONING PHASE

MAJOR WORK TASK	HAZARD	CAUSE	PREVENTATIVE MEASURES
De-energize work areas and remove cables and wiring	Electrical shock to body, cutting of extremities or body parts using wire strippers or other hand tools, falling off ladder	Lockout/tagout not used properly, all workers not informed of lockout/tagout status Improper use of hand tools, ladders or scaffolding Improper lighting	• Utilize lockout and tagout procedures • Inspect all hand tools before use • Ensure all workers are trained in ladder, scaffolding and fall protection measures • Develop and utilize task specific AHAs • Perform work area walkdown and conduct proper planning meetings and briefings • Follow all IWCP instructions • Ensure all worker training is current
Move and transport equipment utilizing forklifts, pallet jacks or pick up trucks	Back injuries, pinching, extremity damage by dropping or falling objects Internal and external body injuries by vehicle impact Eye injuries by poking or dust particles in eye Noise hazards	Improper lifting techniques, job flow not planned properly, pre-job walkdowns not performed, vehicle alarm systems not working, buddy system not used, lack of attention to detail, worker fatigue or no use or improper use of PPE	• Perform pre-job walkdowns • Develop AHAs • Use buddy system • Ensure vehicle alarm and braking systems are working properly • Utilize PPE properly • Perform proper lifting techniques • Ensure proper job flow is used and job is not rushed • Perform pre-job warm up exercises before lifting • Do not attempt to move items that are stacked to high • Cover all sharp edges

FIGURE 4-1
PRELIMINARY HAZARD ANALYSIS OVERVIEW
BUILDING 123 DISMANTLEMENT AND DECOMMISSIONING

DISMANTLEMENT & DECOMMISSIONING PHASE

MAJOR WORK TASK	HAZARD	CAUSE	PREVENTATIVE MEASURES
Cut out piping systems in rooms or work areas	Cutting of body limbs or body parts with mechanical equipment Piping falling on feet, pinch points of rolling pipe, liquid splashes if piping is not drained, springing of piping into body when cut	Improper use of mechanical equipment including lack of training for equipment being used, piping not rigged or restrained properly, piping not drained prior to cutting	• Proper training with cutting equipment • Develop and utilize AHA for job tasks • Rig and restrain piping properly • Utilize pipe caps after cutting to keep debris from falling out and cover sharp edges of pipes • Ensure piping has been properly taken out of service • Utilize proper PPE as described in the AHA and RWP
Rig piping and equipment out of rooms	Bodily injuries due to falling objects or pinching of workers due to space limitations	No rigging plan, improper rigging techniques, improper worker body positioning	• Develop rigging plan • Comply with all RFETS standards for rigging • Develop AHA and implement • Perform pre-job walkdown and conduct pre-evolution briefings • Walkdown rigging path - all phases • Perform pre- and Post-job inspections on all rigging equipment • Ensure all workers are properly trained • Follow all requirements of the IWCP

FIGURE 4-1
PRELIMINARY HAZARD ANALYSIS OVERVIEW
BUILDING 123 DISMANTLEMENT AND DECOMMISSIONING

DISMANTLEMENT & DECOMMISSIONING PHASE

MAJOR WORK TASK	HAZARD	CAUSE	PREVENTATIVE MEASURES
Packaging waste into containers for storage and shipment	Pinching of extremities on container lids, barrels rolling on feet, back strains, foot injuries as vehicle wheels impact or roll onto extremities, cuts/gashes of hands by tooling	Improper lifting and handling techniques, wrong tooling used to put lids on containers, pallet jack or forklift ramming into workers, job rushed or not planned properly	• Develop AHA and implement • Review lessons learned from previous waste handling operations • Develop proper tool list before starting job • Ensure all waste containers are properly staged before starting job • Ensure all building notifications are made before moving and handling waste • Follow all RFETS requirements for waste handling and movement • Follow all IWCP requirements
Cut out and remove hoods from rooms or work areas	Pinch points, foot and hand injuries, cutting of hands/arms, eye and head injuries, burning of skin or extremities	Improper use of grinders, no guards on grinders, cramped working conditions, bad lighting, limited vision, breaking of leaded glass, plasma slag burns, improper use of PPE	• Proper training with cutting equipment • Develop and utilize AHA for job tasks • Rig and restrain gloveboxes properly • Utilize pipe caps on piping after cutting • Ensure gloveboxes have been properly taken out of service before work starts • Utilize proper PPE as described in the AHA • Perform tooling inspections before each use • Follow all IWCP requirements

FIGURE 4-1
PRELIMINARY HAZARD ANALYSIS OVERVIEW
BUILDING 123 DISMANTLEMENT AND DECOMMISSIONING

DISMANTLEMENT & DECOMMISSIONING PHASE

MAJOR WORK TASK	HAZARD	CAUSE	PREVENTATIVE MEASURES
Construct and utilize scaffolding to perform job tasks	Fall hazards, workers struck by failing objects, hand injuries	No use of fall protection, improper training, no use of PPE, improper use of tooling, improper rigging and transport of scuffling pieces, no scaffold inspections, scaffold collapse	• Proper training for scaffold erection and use • Fall protection and rigging training • Proper use of PPE • Develop AHA • Perform documented scaffolding inspections • Ensure all scaffolding is tagged properly • Ensure all toeboards and siderails are in place
Perform decontamination operations using scabbling machines, hand wiping methods or by applying stripcoat decontamination paint	Extremity injuries by gouging, cutting or impact Inhalation, ingestion or skin exposure to radioactive materials and ammonia vapors, electrocution, falls	Improper or no training on equipment used for decontamination, improper work area ventilation, improper use of PPE, no job planning, no lockout/ tagout of work area, no fall protection	• Conduct mock up training on decontamination equipment and stripcoat operations • Develop AHA for job tasks • Ensure work area is properly ventilated before applying stripcoat • Ensure lockout/tagout operations have been performed • Wear prescribed PPE • Utilize fall protection when required • Follow all IWCP, AHA, and RWP requirements

5.0 MONITORING

The need for chemical hazard monitoring will be determined by the project IH&S Lead or designee All air sampling and monitoring will be performed with approved National Institute of Occupational Safety and Health (NIOSH) or OSHA sampling methods using either direct reading instrumentation or personal air sampling All instrumentation used will be calibrated in accordance with factory recommendations

Monitoring for radiological hazards, as necessary, will be identified on radiological work permits All radiological monitoring will be performed in accordance with the procedures contained in the site HSPs and the RCM

Where feasible, engineering controls shall be utilized to maintain personnel exposures to hazardous chemicals within the threshold limit values adopted by the American Conference of Governmental Industrial Hygienists (ACGIH) or the permissible exposure limits adopted by OSHA, whichever is more stringent

Additional monitoring beyond that described in this section may be required by the subcontractor depending on the work methods, equipment, and materials employed by the subcontractor

5.1 NOISE MONITORING

Sound pressure levels shall be monitored to delineate hearing protection areas Those areas with stationary sources routinely testing at or above 85 dBA shall be appropriately posted to indicate the noise hazard Monitoring frequency and sample quantity shall be determined by the Contractor's industrial hygienist The frequency will be sufficient to adequately monitor areas where workers may be exposed to noise levels in excess of 85 dBA Suitable hearing protection shall be worn in areas with noise levels greater than 85 dBA

5 2 HEAT STRESS MONITORING

Monitoring will consist of periodic measurement of worker body temperature and heart rate during periods when work area temperatures exceed 85 °F and protective clothing is required for the work activity Monitoring may also be required for workers engaged in strenuous activities regardless of the protective clothing requirements Monitoring frequency will be determined by the Contractor's industrial hygienist and will be based on the work area temperature and the type of work being performed The Subcontractor shall ensure that personnel are made available for routine heat stress monitoring when conditions warrant such monitoring

5 3 CONFINED SPACE MONITORING

Prior to any confined space entry, a competent individual shall perform the atmospheric monitoring as described on the confined space entry permit to determine if a hazardous atmosphere exists Typical areas of monitoring include oxygen combustible gas, carbon monoxide, hydrogen sulfide, photoionizable substances, and any other toxic atmospheric contaminants that may be present based on information available on previous use of the confined space If a hazardous atmosphere exists, ventilation or ventilation in conjunction with respiratory upgrade will be required before entry In no case shall a confined space be entered where the atmosphere exhibits greater than 10% of the lower explosive limit

5 4 ASBESTOS MONITORING

Representative personnel and area monitoring for asbestos exposure shall be performed according to the requirements of OSHA 29 CFR 1926 1101 and applicable State of Colorado regulations In addition, potential exposure to man-made mineral fibers (MMF) above specified action levels shall be monitored to ensure the adequacy of PPE and work practices

All airborne asbestos or MMF samples shall be collected and analyzed using the NIOSH Method 7400 and analyzed by a laboratory having both current American Industrial Hygiene Association

accreditation for asbestos air sample analysis

5 5 SUBCONTRACTOR POSTING OF MONITORING RESULTS

Subcontractors shall review monitoring results with employees Subcontractors shall notify and supply employees with the results of exposure monitoring in accordance with any OSHA standard requiring such written notification The Subcontractor shall submit to the Contractor in writing the results of personnel, area, and other monitoring performed during the execution of this subcontract within 24 hours of the receipt of results, unless otherwise specified

6.0 GENERAL SAFETY

Each Subcontractor and lower-tier Subcontractor is solely responsible for providing a safe workplace for their personnel who will be exposed to various hazards related to work at RFETS Some of these hazards are addressed in this section, and the Subcontractor shall comply with all applicable requirements listed below However, the Subcontractor is charged with the responsibility of adding to, or modifying, the requirements of this section to meet the needs of his required tasks The Subcontractor shall obtain Contractor approval for any such additions and modifications and identify them in the AHA, as applicable

This HASP has been developed to address numerous hazards which exist at RFETS Depending on the specific nature of a given work activity, the work methods, and the locations of work, some of the hazards and preventive measures described herein may not be applicable to some of the work to be performed

The Subcontractor shall be responsible for full compliance, including compliance by lower-tier subcontractors, with all applicable sections of 29 CFR 1926, 29 CFR 1910, DOE health and safety regulations, site-specific HSPs, and all Contractor requirements identified in this HASP Where the provisions of the individual Subparts of 29 CFR 1910 or 1926 require a "competent person", the Subcontractor shall provide a qualified person meeting the specific requirements identified in the OSHA standard

The Contractor will make inspections under the OSHA format and require corrective actions for all deficiencies discovered Willful violation, refusal, or failure to abate violations of safety and health standards or rules will be justification for removal of Subcontractor personnel from the site and/or contract termination

The Contractor reserves the right to invoke the OSHA general duty clause on any operation which, in the opinion of the Contractor, is being conducted in an unsafe manner, even though the infraction is not specifically spelled out in the regulations or this HASP

6 1 HOUSEKEEPING

Subcontractors shall ensure that all activities consider housekeeping measures that are adequate for the tasks being performed Maintenance of housekeeping during all construction projects is crucial to minimizing the severity of emergency situations and reducing accident rates Subcontractors shall ensure that construction projects incorporate housekeeping practices in accordance with the following health and safety documents

- 29 CFR 1926 25, Housekeeping
- HSP 13 8, Housekeeping and Sanitation

At a minimum, subcontractors are responsible for the applicable requirements established in these documents This includes ensuring that waste is cleared from work areas at regular intervals during the course of construction activities At all times, passageways shall be kept clear so that in the event of an emergency, egress routes are not obstructed Waste shall be appropriately contained and dispositioned based on the hazards of the material Work areas shall be kept clean and floors dry to the extent that the work allows

6 2 ILLUMINATION

Subcontractors shall ensure that all areas where work is performed are adequately illuminated Construction activities must be conducted in accordance with the following health and safety documents

- 29 CFR Part 1926 26, Illumination
- 29 CFR Part 1926 56, Illumination

At a minimum, subcontractors are responsible for the applicable requirements set forth in these documents This includes ensuring that construction areas, aisles, ramps, runways, corridors, offices, shops, and storage areas where work is in progress are lighted to not less than the minimal illumination intensities listed in Table D-3 of 29 CFR 1926 56 while any work is in progress

6 3 SITE SANITATION

Acceptable sanitation practices shall be recognized for all site construction activities Providing a sanitary work place is essential to ensuring the well-being of all contract employees Subcontractors shall ensure that construction projects incorporate sanitation practices in accordance with the following health and safety documents

- 29 CFR Part 1926 51, Sanitation
- HSP 13 8, Housekeeping and Sanitation

At a minimum, subcontractors are responsible for the applicable requirements established in these documents This includes ensuring that a source of potable water, lavatories, and toilets are supplied at each place of employment Also, all sources of nonpotable water shall be marked as such Change rooms shall be provided in areas where employees are required to wear protective clothing due to the possibility of contamination with toxic materials

6 4 HAZARD COMMUNICATION

Subcontractors shall ensure that all construction personnel are effectively informed of the hazards they are exposed to, or potentially exposed to, in the workplace Construction personnel must also be informed of the methods available to prevent exposure Subcontractors shall ensure that hazard communication (HAZCOM) requirements are implemented at each location in accordance with the following health and safety documents

- 29 CFR Part 1926 59, Hazard Communication
- HSP 9 07, Hazard Communication Program

At a minimum, subcontractors are responsible for the applicable requirements set forth in these documents This includes developing a written hazard communication program for each site, as necessary, and providing appropriate training to personnel The written HAZCOM program must discuss how labels and material safety data sheets (MSDS) can be used to protect personnel against workplace hazards Training must ensure the workers understand the information on both labels and MSDSs, know how to access this information when needed, and are aware of the proper protective procedures to follow Implementation of the HAZCOM Program will ensure that all personnel have knowledge of the hazards and identities of the chemicals they work with, and will reduce the incidence of chemically related occupational illnesses and injuries

6 5 FIRE PROTECTION AND PREVENTION

Subcontractors shall be responsible for the development of a fire protection program to be followed throughout all phases of construction and demolition work It is critical that all fire protection and prevention precautions be strictly complied with to minimize fire potential Subcontractors must ensure that the applicable fire safety measures are complied with in accordance with the following regulatory reference

- 29 CFR Part 1926 150 -159 (Subpart F), Fire Protection and Prevention

At a minimum, subcontractors are responsible for the applicable requirements set forth in this document This includes developing and implementing a fire protection program that will be used through all phases of the project The subcontractor must provide an adequate water supply, portable fire extinguishers, or other method of fire suppression at appropriate locations in accordance with applicable regulatory requirements When work on elevated work platforms (scaffolds) includes the use of festoon or halogen lighting systems, or any other potential source of ignition, portable fire extinguishers must be readily accessible for worker protection All fire suppression equipment shall be maintained and inspected to ensure it will operate when needed Subcontractor personnel shall be trained in the use of portable fire extinguishers in accordance with the applicable OSHA requirements Certification of training shall be provided to the contractor prior to commencement of work activities

Subcontractors shall ensure that electrical wiring and equipment used for light, heat, or power purposes is installed in compliance with the electrical requirement of Subpart K of 29 CFR 1926 Internal combustion engines used to power equipment shall be located so that the exhausts are well away from combustible materials Smoking shall be prohibited at or in the vicinity of operations which constitute a fire hazard Fire hazard areas shall be conspicuously posted "No Smoking or Open Flame " Portable battery powered lighting equipment, used in connection with the storage, handling, or use of flammable gases or liquids, shall be of the type approved for hazardous conditions Subcontractors must ensure that the nozzle of air, inert gas, and steam lines or hoses, when used in the cleaning or ventilation of tanks and vessels that contain hazardous concentrations of flammable gases or vapors, shall be bonded to the tank or vessel shell Bonding devices shall not be attached or detached in hazardous concentrations of flammable gases or vapors

6 6 FLAMMABLE AND COMBUSTIBLE LIQUIDS

Subcontractors shall ensure that flammable and combustible liquids used during construction activities are properly stored, transferred, dispensed, and handled The use of recognized safety practices for flammable and combustible liquids is crucial to minimizing potential fire hazards Subcontractors must manage flammable and combustible liquids in accordance with the following regulatory reference

- 29 CFR Part 1926 152, Flammable and Combustible Liquids

At a minimum, subcontractors are responsible for the applicable requirements set forth in this document This includes using only approved containers and portable tanks for the storage and handling of flammable and combustible liquids Containers and tanks used for the storage of such materials shall be appropriately labeled Storage locations for flammable and combustible liquids shall be chosen considering all elements necessary for the safe storage of such materials

6 7 CONFINED SPACES

Subcontractors shall ensure that the applicable requirements are followed to protect personnel from the hazards of entry into confined spaces Subcontractors shall evaluate each workplace to determine if any spaces fit the definition of a permit-required confined space Permit-required confined spaces shall be managed in accordance with the following regulatory reference

- 29 CFR 1910 146, Permit-Required Confined Spaces

At a minimum, subcontractors are responsible for the applicable requirements set forth in this document This includes developing a permit space program if it is determined that the workplace contains permit-required confined spaces that will be entered by employees Subcontractors shall develop a written program to prevent unauthorized entry, identify and evaluate hazards, and establish procedures and practices for safe entry, including testing and monitoring conditions, stationing attendants outside permit spaces during entry times, and posting procedures to summons rescuers and preventing unauthorized personnel from attempting a rescue The permit space program shall ensure that supervisors authorize entry to confined spaces, prepare and sign permits, order corrective measures when necessary, and cancel permits when the work is completed

6.8 LOCKOUT/TAGOUT

Subcontractors shall ensure that the required procedures are followed for lockout/tagout of equipment to ensure the protection of personnel, the environment, and equipment due to unexpected energization, start-up, release of stored energy or release of hazardous materials from equipment The use of required lockout/tagout procedures is essential to providing personnel with a safe workplace and minimizing occupational injuries Subcontractors must ensure that lockout/tagout precautions are used in accordance with the following health and safety documents

- 29 CFR Part 1910 147, The Control of Hazardous Energy (Lockout/Tagout)
- 29 CFR Part 1926 417, Lockout and tagging of circuits
- HSP 2 08, Lockout/Tagout

At a minimum, subcontractors are responsible for the applicable requirements set forth in these documents This includes training employees to recognize hazardous energy sources, the type and magnitude of energy sources found in the workplace, the means and methods of isolating and/or controlling energy, the means of verification of effective energy control, and the purpose of the procedures to be used The subcontractor shall ensure that lockout/tagout procedures are used when required and that lockout/tagout permits are completed by a competent person in accordance with the applicable requirements

In situations where RMRS de-energizes a system, the subcontractor must also put their lock or tag on the system Each subcontractor is required to develop a procedure by which this may be accomplished

6 9 MATERIALS HANDLING

Subcontractors shall ensure that all materials used or produced during construction activities are properly stored, used, or disposed Handling of all materials shall be in accordance with safe and acceptable work practices Subcontractors shall ensure that material handling is conducted in accordance with the following health and safety documents

- 29 CFR Part 1926 250 - 252 (Subpart H), Materials Handling, Storage, Use, and Disposal
- 29 CFR Part 1926 602, Material Handling Equipment
- 29 CFR Part 1926 953, Material Handling

At a minimum, subcontractors are responsible for the applicable requirements set forth in these documents This includes ensuring that all materials stored in tiers are stacked, racked, blocked, interlocked, or otherwise secured to prevent sliding, falling, or collapse Maximum safe load limits of floors within buildings and structures shall be conspicuously posted in all storage areas, except for floor or slab on grade Subcontractors shall ensure that aisles and passageways shall be kept clear to provide for the free and safe movement of material handling equipment or employees Such areas shall be kept in good repair

6 10 HAND AND POWER TOOLS

Subcontractors shall ensure that employees utilize hand and portable power tools that are maintained in serviceable condition and free from hazards Subcontractors are responsible for instructing employees in the safe use and inspection of tools utilized as part of their job Subcontractors must ensure that hand and power tools are used in accordance with the following health and safety documents

- 29 CFR Part 1926 300 - 307 (Subpart I), Tools - Hand and Power
- HSP 12 10, Hand and Portable Power Tools

At a minimum, subcontractors are responsible for the applicable requirements established in these documents This includes ensuring that tools are properly guarded, that employees are provided with the proper PPE, and that tools are equipped with proper "on-off" control switches Subcontractors shall not issue or permit the use of unsafe power or hand tools

6 11 WELDING, CUTTING, AND BRAZING

Subcontractors shall ensure that welding, cutting, and brazing activities performed during construction activities are conducted in accordance with acceptable safe work practices Welding, brazing, and cutting shall only be performed in authorized areas under safe environmental conditions with adequate ventilation Subcontractors must manage construction projects in accordance with the following health and safety documents

- 29 CFR Part 1926 57, Ventilation
- 29 CFR Part 1926 350 - 354 (Subpart J), Welding and Cutting
- HSP 12 11, Welding, Cutting, and Brazing
- HSP 31 10, Welding Permits

At a minimum, subcontractors are responsible for the applicable requirements established in these documents This includes ensuring that appropriate personnel receive training adequate for their job responsibilities When practical, welding, cutting, or brazing operations shall be conducted in a permanent welding area unless the object to be welded or cut cannot be readily moved When possible, ventilation shall be used in an effort to minimize respiratory hazards Personnel shall use PPE appropriate for the task they are performing Welding permits shall be used, when required, to review a job for possible safety, fire, and explosion hazards, and to identify the necessary precautions for the safety and health of personnel and for the protection of property

6 12 ELECTRICAL

Subcontractors shall address electrical safety requirements necessary for the safeguarding of employees involved in construction work Subcontractors shall ensure that only trained and qualified electrical workers are assigned to perform work on electrical equipment, components, and systems Subcontractors must ensure that the proper electrical safety requirements are used in accordance with the following health and safety documents

- 29 CFR Part 1926 400 - 449 (Subpart K), Electrical
- HSP 15 00, Electrical Safety Practices
- 1-C18-HSP-24 01, Construction Safety and Health Requirements

At a minimum, subcontractors are responsible for the applicable requirements established in these documents This includes ensuring that all personnel receive electrical training adequate for their job responsibilities Subcontractors will ensure that personnel who install, repair, or remove

electrical equipment are informed of site-specific hazards so that they may follow special precautions to prevent environmental and personnel contamination Electrical equipment and circuits shall be considered energized unless they are positively determined to be de-energized by a qualified electrical worker Physical safety barriers, warning signs, and labels must be used in accordance with regulatory requirements and site procedures Portable electrical tools, equipment, and cords must be of satisfactory condition so that they do not cause harm to personnel or property

6 13 SCAFFOLDS

Subcontractors shall ensure that scaffolds are furnished and used in accordance with applicable OSHA regulations for persons engaged in work that cannot be done safely from the ground or from solid construction Subcontractors shall ensure that scaffolds and associated equipment are properly erected and maintained to ensure the safety of subcontract personnel The use of scaffolding must be conducted in accordance with the following regulatory reference

- 29 CFR Part 1926 450 - 454 and appendices (Subpart L), Scaffolds

At a minimum, subcontractors are responsible for the applicable requirements set forth in this document This includes ensuring proper scaffold construction and use Scaffolds shall be designed by a qualified and competent person and constructed and loaded in accordance with that design Training and qualifications of the competent scaffold erection supervisor shall be provided to the contractor prior to commencement of work activities Personnel involved in erecting, disassembling or moving scaffolding shall be trained in accordance with 29 CFR 1926 454 Training records shall be provided to the contractor prior to commencement of work activities

Fall protection shall be provided to workers during erection and dismantling activities involving 10 feet or more and/or two or more sections of scaffolding Permits shall be attached to each scaffolding system Permits shall be in the form of weather resistant tags Scaffolding systems shall be inspected and the permit shall be signed off on a daily basis by a competent scaffold erection supervisor Scaffolds shall be marked with a green tag if it meets all safety requirements as stipulated under OSHA regulations Scaffolds shall be marked with a red tag if it does not meet all safety requirements Safety requirements for use of an incomplete scaffold shall be specified on the permit

Scaffolds four feet or higher above the ground or floor and having a minimum horizontal dimension of 45 inches in either direction shall be equipped with standard guardrails (including toeboards) and gates Where guardrails are not feasible, personal fall arrest equipment shall be used Ladders shall be provided as access to scaffolds Climbing on scaffold ends or cross bracing shall not be permitted

Scaffolds and scaffold components shall not be loaded in excess of their maximum intended loads or rated capacities, whichever is less Subcontractors shall ensure that scaffolds and scaffold components are inspected by a competent person prior to each work shift, and after any occurrence which could affect a scaffold's structural integrity

6 14 FALL PROTECTION

Subcontractors shall identify fall hazards for each construction task and provide appropriate fall protection equipment to personnel working in an area where a hazard has been identified Subcontractors must ensure that the requirements for the installation, construction, and proper use of fall protection is in accordance with applicable regulatory requirements and site-specific procedures Subcontractors must manage construction projects in accordance with the following health and safety documents

- 29 CFR Part 1926 500 - 503 and appendices (Subpart M), Fall Protection
- HSP 22 05, Fall Protection and Equipment

At a minimum, subcontractors are responsible for the applicable requirements established in these documents This includes conducting pre-job planning to determine the fall potential and appropriate fall protection equipment for each task Fall protection equipment shall be selected based upon recognized industry standards and OSHA regulations For areas where fall protection is deemed appropriate, subcontractors must determine environmental hazards at the worksite, designation of anchor points, a means of maintaining contact with personnel during work, and a means of rescue after a fall All fall protection equipments shall be subjected to a pre-use inspection Subcontractors shall ensure that fall protection equipment is only used for its intended purpose and in accordance with acceptable safe work practices All subcontractor employees who might be exposed to fall hazards are required to receive appropriate training to recognize the hazards of falling and procedures to be followed to minimize these hazards

Where work will be performed from the platform of an incomplete scaffold (no guardrails or toeboards), outside of the boundaries of a scaffold, or from a ladder where the worker's feet are more than 6 feet above the floor or ground, the worker shall be provided with a personal fall arrest system At a minimum, personal fall arrest systems shall consist of an approved full body harness, shock absorbing lanyard or retractable lifeline system, and anchorage points which meet or exceeds the requirements specified in 29 CFR 1926 502(d) The personal fall arrest equipment must be rigged such that a worker can neither free fall more than 6 feet, nor contact any lower level

The Subcontractor shall utilize 100% fall protection practices The term "100% fall protection" means the design and use of a fall protection system such that no exposure to an elevated fall hazard occurs This may require more than one fall protection system or a combination of prevention or protection measures Definitions are provided in section 6 14 3 for the terminology used throughout this section Fall protection is required in areas which include, but are not limited to

- Any and all elevated work areas
- Scaffolding
- Power driven staging and platforms
- Manbaskets
- Roofs
- Excavations

A full body harness is required for elevated work above 6 ft Safety belts will not be permitted unless prior approval is received from the Contractor All fall protection equipment shall be inspected before use by the user and quarterly by a competent person Inspection records shall be available to the Contractor upon request

Vertical lifelines may only be used in conjunction with a manufactured rope-grab system Wire rope lifelines shall have a minimum of three wire rope clips Cutting or burning around manila or nylon lifeline ropes is prohibited

The Subcontractor shall address the following (where applicable) in the PHA

- Identify all fall hazards in the work area
- Describe the method of fall arrest or fall restraint to be provided, including any drawings that may be deemed necessary

Procedures for the assembly, maintenance, inspection, and disassembly of the fall protection system to be used shall be made available to the Contractor upon request

6 14.1 Fall Restraint, Fall Arrest Systems

When employees are exposed to a potential fall hazard of 6 ft or more in height, the Subcontractor shall ensure that fall restraint and/or fall arrest systems are provided, installed, and implemented according to the following requirements

Fall Restraint

Fall restraint protection shall consist of

- Standard guardrails as described in OSHA 29 CFR 1926 500
- Safety belts and/or harness attached to securely rigged restraint lines
  - Safety belts and/or harness shall conform to ANSI Standards

    Class I - body belt
    Class II - chest harness
    Class III - full body harness
    Class IV - suspension/position belt

  - Rope grab devices are prohibited for fall restraint applications unless they are part of a fall restraint system designed specifically for the purpose by the manufacturer and used in strict accordance with the manufacturer's recommendations and instructions
  - The Subcontractor shall ensure component compatibility
  - Components of fall restraint systems shall be inspected prior to each use for mildew, wear, damage, and other deterioration, and defective components shall be removed from service if their function or strength have been adversely affected
  - Anchorage points used for fall restraint shall be capable of supporting four times the intended load
  - Restraint protection shall be rigged to allow the movement of employees only as far as the sides and edges of the walking/working surface
- A warning line system as prescribed in OSHA 29 CFR 1926 500 However, warning line systems are prohibited on surfaces exceeding 4 in 12 pitch

Fall Arrest

Fall arrest protection shall consist of

- Full body harness, shock-absorbing lanyards with double-action locking snaphooks and/or lifelines
  - An approved Class III full-body harness shall be used
  - An approved shock-absorbing lanyard or double lanyard shall be used
  - All components of a full-body harness system subject to impact loading shall be immediately discarded
  - All safety lines and lanyards shall be protected against being cut or abraded

- Full-body harness system shall be rigged to minimize free fall distance with a maximum free fall distance allowed of 6 ft, and such that the employee will not contact any lower level

- The full-body harness system shall be connected to an anchorage point above the shoulders However, if conditions warrant, the Contractor may approve alternate connection points

- When vertical lifelines (droplines) are used, not more than one employee shall be attached to any one lifeline

- All components of full-body harness systems shall be capable of supporting a minimum dead weight of 5,400 lbs

- Snap-hooks shall not be connected to each other

- Not more than one snap-hook shall be connected to any one D-ring

- Full-body harness systems shall be inspected prior to each use for mildew, wear, damage, and other deterioration, and defective components shall be removed from service if their function or strength have been adversely affected

• Safety nets shall not be used in lieu of full-body harnesses

6 14.2 Guarding of Low-Pitched Roof Perimeters

General Provisions

During the performance of work on low-pitched roofs with a ground to eave height greater than 6 ft, the Subcontractor shall ensure that employees engaged in such work be protected from falling from all unprotected sides and edges of the roof as follows

• By the use of a fall restraint or fall arrest system

• By the use of a warning line system

• Mechanical equipment shall be used or stored only in areas where employees are protected by a warning line system, or fall restraint, or fall arrest systems

Exception

• The provisions of this section do not apply at points of access such as stairways, ladders, and ramps

Warning Lines Systems

• Warning lines shall be erected around all sides of the work area

  - When mechanical equipment is not being used, the warning line shall be erected not less than 6 ft (1 8 m) from the edge of the roof

  - When mechanical equipment is being used, the warning line shall be erected not less than 6 ft (1 8 m) from the roof edge which is parallel to the direction of mechanical equipment operation, and not less than 10 ft (3 1 m) from the roof edge which is perpendicular to the direction of mechanical equipment operation

• The warning line shall consist of a rope, wire, or chain and supporting stanchions

erected as follows

- The rope, wire or chain shall be flagged at not more than 6 ft (1 8 m) intervals with high-visibility material
- The rope, wire, or chain shall be rigged and supported in such a way that its lowest point (including sag) is no less than 34 in (0 86 m) above the roof surface, perpendicular to the warning line, and in the direction of the roof edge
- The rope, wire, or chain shall have a minimum tensile strength of 500 lbs (227 kg)
- The line shall be attached at each stanchion in such a way that pulling on one section of the line between stanchions will not result in slack being taken up in adjacent sections before the stanchion tips over
- A warning line system rope or chain shall be capable of resisting without tipping over, a force of at least 16 lbs (71 Newtons) applied horizontally against any part of the system

- Access paths shall be erected as follows
  - Points of access, materials handling areas, and storage areas shall be connected to the work area by a clear access path formed by two warning lines
  - When the path to a point of access is not in use, a rope, wire, or chain, equal in strength and height to the warning line, shall be placed across the path at the point where the path intersects the warning line erected around the work area

Roof Edge Materials Handing Areas and Materials Storage

Employees working in a roof edge materials handling or materials storage areas location on a low-pitched roof with a ground to eave height greater than 6 ft shall be protected from falling along all unprotected roof sides and edges of the area

- When guardrails are used at hoisting areas, a minimum of 4 ft of guardrail shall be erected on each side of the access point through which materials are hoisted
- A chain or gate shall be placed across the opening between the guardrail sections when hoisting operations are not taking place
- When guardrails are used at bitumen pipe outlets, a minimum of 4 ft of guardrail shall be erected on each side of the pipe
- When safety belt/harness systems are used, they shall not be attached to the hoist
- When fall restraint systems are used, they shall be rigged to allow the movement of employees only as far as the roof edge
- Materials shall not be stored within 6 ft of the roof edge unless guardrails are erected at the roof edge

6.14 3 Fall Protection Definitions

Anchorage - A secure point of attachment for lifelines, lanyards, or deceleration devices which is capable of withstanding a dead weight of 5,400 Lbs for each employee

Body belt - A Type 1 safety belt used in conjunction with lanyard or lifeline for fall restraint only

Full-Body Harness - A configuration of connected straps to distribute a fall arresting force over at least the thighs, shoulders, and pelvis, with provisions for attaching a lanyard, lifeline, or deceleration devices

Competent Person - An individual knowledgeable of fall protection equipment, including the manufacturers recommendations and instructions for the proper use, inspection, and maintenance, and who is capable of identifying existing and potential fall hazards, and who has the authority to take prompt corrective action to eliminate those hazards, and who is knowledgeable of the rules contained in this section regarding the erection, use, inspection, and maintenance of fall protection equipment and systems

Continuous Fall Protection - The design and use of fall protection system such that no exposure to an elevated fall hazard occurs This may require more than one fall protection system or a combination of prevention or protection measures

Deceleration Device - Any mechanism, such as a rope grab, ripstitch lanyard, specifically woven lanyard and automatic self-retracting lifeline, which serves to dissipate more energy during a fall arrest than does a standard line or strap webbing lanyard

Drop Line - A vertical lifeline secured to an upper anchorage for the purpose of attaching a rope grab device

Fall Arrest System - The use of multiple, approved safety equipment components such as body harnesses, lanyards, deceleration devices, droplines, horizontal and/or vertical lifelines and anchorages, interconnected and rigged as to arrest a free fall

Fall-Restraint System - An approved device and any necessary components that function together to restrain an employee in such a manner as to prevent that employee from falling to a lower level When standard guardrails are selected, compliance with applicable sections governing their construction and use shall constitute approval

Fall Distance - The actual distance from the worker's support to the level where a fall would stop

Horizontal Lifeline - A rail, rope, wire, or synthetic cable that is installed in a horizontal plane between two anchorages and used for attachment of a worker's lanyard or lifeline device while moving horizontally, used to control dangerous pendulum-like swing falls

Lanyard - A flexible line of webbing, rope, or cable used to secure a body belt or full body harness to a lifeline or an anchorage point usually 2 ft, 4 ft, or 6 ft long, which includes double-action, locking snap-hooks and an integral shock-absorber

Snap Hook - A connecting snap hook that requires two separate forces to open the gate one to deactivate the gatekeeper and a second to depress and open the gate which automatically closes when released, used to minimize roll-out or accidental disengagement

Low-Pitched Roof - A roof having slope equal to or less than 4 in 12

Rope Grab - A fall arrester that is designed to move up or down a lifeline suspended from a fixed overhead or horizontal anchorage point, or lifeline, to which the belt or harness is attached In the event of a fall, the rope grab locks onto the lifeline rope through compression to arrest the fall The use of a rope grab device is restricted for fall restraint applications

Self-Retracting Lifeline - A deceleration device which contains a drum-wound line which may be slowly extracted from, or retracted onto, the drum under slight tension during normal employee movement, and which after onset of a fall, automatically locks the drum and arrests the fall

Strength Member - Any component of a fall protection system that could be subject to loading in the event of a fall

Walking/Working Surface - Any area whose dimensions are 45 in or greater in all directions, through which workers pass or conduct work

Warning Line System - A barrier erected on a walking and working surface or a low-pitch roof (4/12 pitch or less), to warn employees that they are approaching an unprotected fall hazard

Work Area - That portion of a walking/working surface where job duties are being performed

6 15 CRANES AND DERRICKS

Subcontractors shall comply with all regulatory requirements and manufacturer's specifications and limitations applicable to the operation of cranes and derricks Cranes and derricks and associated equipment used during construction activities shall not exceed the capacity, rating, or scope recommended by the manufacturer Subcontractors shall ensure that the use of cranes and derricks is conducted in accordance with the following regulatory reference

- 29 CFR Part 1926 550, Cranes and Derricks

At a minimum, subcontractors are responsible for the applicable requirements established in this document This includes ensuring that all machinery in operated and inspected by a competent person Equipment inspections shall take place prior to each use, during use, to make sure the equipment is in safe operating condition Subcontractors shall ensure that rated load capacities, recommended operating speeds, and special hazard warnings or instructions are conspicuously posted on all equipment Instructions or warnings shall be visible to the operator while he is at his control station

6 16 MOTOR VEHICLE AND MECHANIZED EQUIPMENT

Subcontractors shall ensure the safe operation of motor vehicles and mechanized equipment during the course of all onsite construction activities All motor vehicles and mechanized equipment must be properly maintained to minimize the potential of injury to personnel Subcontractors shall ensure the appropriate measure are followed in accordance with the following regulatory reference

- 29 CFR Part 1926 600 - 606 (Subpart O), Motor Vehicles, Mechanized Equipment, and Marine Operations

At a minimum, subcontractors are responsible for the applicable requirements set forth in this document This includes ensuring that equipment is properly secured and distinguished with lights, reflectors, or other means, to identify the location of the equipment at night and when not in use All vehicles shall have brake lights in operable condition regardless of light conditions Whenever visibility conditions warrant additional light, vehicles shall be equipped with at least two headlights and two taillights in operable condition All vehicles shall be equipped with an adequate warning device at the operator's station in an operable condition

6 17 EXCAVATIONS

Subcontractors shall ensure that excavations are conducted using appropriate safety practices Prior to the commencement of any excavation activities, a site evaluation of the area to be excavated will be performed to identify potential hazards and the necessary precautionary measures Subcontractors must perform excavation activities in accordance with the following health and safety documents

- 29 CFR Part 1926 650 - 652 and appendices (Subpart P), Excavations
- 29 CFR Part 1910 146, Permit Required Confined Space
- HSP 6 04, Confined Space Entry Program
- HSP 12 08, Excavations and Trenching
- 1-C18-HSP-24 01, Construction Safety and Health Requirements

At a minimum, subcontractors are responsible for the applicable requirements set forth in these documents This includes informing trenching and excavation personnel of the necessary requirements to comply with applicable OSHA regulations and site-specific requirements The subcontractor is responsible for ensuring that daily inspections of excavations, adjacent areas, and protective systems shall be made by a competent person for evidence of a situation that could result in possible cave-ins, indications of failure of protective systems, hazardous atmospheres, or other hazardous conditions An inspection shall be conducted prior to the start of work and as needed throughout the shift Inspections shall also be made after every rainstorm or other hazard increasing occurrence

The OSHA standards are very specific with respect to excavations All personnel shall receive training appropriate for the activities they are required to perform The term "excavation" applies to any excavation whether by equipment or by hand The requirements outlined in HSP 12 08 will assist in regulating excavation methods that could cause a personnel safety hazard, damage to a buried or unburied utility or other item, or that could cause a spill The requirements under this procedure are in addition to, not in lieu of, any AHA or PHA requirements

A competent person must be present at an excavation greater than 4 ft in depth at all times while personnel are working in it or when the excavation is deemed critical Spoil must be 3 ft from the excavation, and the excavation must be barricaded at all times The Subcontractor must maintain a record of excavation inspections, including reinspection of excavations after weather changes, extended absence from the excavation, and if continued work in the excavation has taken place for a long period of time

Access to excavations must be via secured ladders that extend 36 in above the excavation, have adequate landings at the top and base, and are located within 25 ft of personnel If the Subcontractor and the Contractor disagree on a soil type, the most conservative approach shall prevail All trenches, regardless of depth, that contain water or have been previously excavated shall be considered Class "C" soil If a professional engineer is required to design shoring systems, he or she shall be registered in the State of Colorado

Fall protection shall be required for excavations with slopes steeper than 1 1 or 45 ° and depths 6 ft and greater Standard guard rails or shoring that extends 42 in above the ground level can serve as fall restraint When fall arrest systems such as anchored rope or cable systems are used they should be capable of supporting 5,400 lbs for each person and shall be rigged to allow the movement of employees only as far as the excavations edge

6 18 DEMOLITION

Subcontractors shall ensure that adequate safety precautions are used during all demolition activities The use of safe work practices while performing demolitions is crucial to providing a safe workplace for all personnel Subcontractors shall ensure that demolition activities are performed in accordance with the following regulatory reference

- 29 CFR Part 1926 850 - 860 (Subpart T), Demolition

At a minimum, subcontractors are responsible for the applicable requirements set forth in this document This includes ensuring that the necessary preparatory requirements are followed prior to the start of any demolition activities Subcontractors shall ensure that before starting demolition

operations, an engineering survey is made by a competent person of the structure to determine the condition of the framing, floors, and walls, and possibility of an unplanned collapse of any portion of the structure Any adjacent structure where employees may be exposed shall also be similarly checked The subcontractor shall have in writing evidence that such a survey has been performed

Subcontractors must verify that all electric, gas, steam, sewer, and other service lines are shut off, capped, or otherwise controlled, outside the building line before demolition work is started If it is necessary to maintain any power, water or other utilities during demolition, such lines, shall be temporarily relocated, as necessary, and protected It shall also be determined if any type of hazardous chemicals, gases, explosives, flammable materials, or similarly dangerous substances have been used in pipes, tanks, or other equipment on the property When the presence of any such substances is apparent or suspected, testing and purging shall be performed and the hazard eliminated before demolition is started

Where hazards exists that employees may potentially fall through wall openings, the opening shall be protected to a height of approximately 42 inches When debris is dropped through holes in the floor without the use of chutes, the area onto which the material is dropped shall be completely enclosed with barricades not less than 42 inches high and not less than 6 feet back from the projected edge of the opening above Signs, warning of the hazard of falling materials, shall be posted at each level Removal shall not be permitted in this lower area until debris handling ceases above All floor openings, not used as material drops, shall be covered over with material substantial enough to support the weight of any load which may be imposed Such materials shall be properly secured to prevent its accidental movement

Except for the cutting of holes in floors for chutes, holes through which to drop materials, preparation of storage space, and similar necessary preparatory work, the demolition of exterior walls and floor construction shall begin at the top of the structure and proceed downward Each story of exterior wall and floor construction shall be removed and dropped into the storage space before commencing the removal of exterior walls and floors in the story below Employee entrances to multistory structures being demolished shall be completely protected by sidewalk sheds or canopies, or both, providing protection from the face of the building for a minimum of 8 feet All such canopies shall be at least 2 feet wider that the building entrances or openings (1 foot wider on each side thereof), and shall be capable of sustaining a load of 150 pounds per square foot

6 19 ROLLOVER PROTECTIVE STRUCTURES

Subcontractors shall comply with rollover and overhead protection requirements to minimize the possibility of operator injury resulting from rollover and overhead hazards, such as flying and falling objects, and at the same time to minimize the possibility of operator injury from the cover itself in the event of an accidental upset Subcontractors must ensure that the proper safety precautions are complied with in accordance with the following regulatory reference

- 29 CFR Part 1926 1000 - 1003 (Subpart W), Rollover Protective Structures, Overhead Protection

At a minimum, subcontractors are responsible for the applicable requirements established in this document This includes ensuring that rollover protection structures and supporting attachments meet the minimum performance criteria required by OSHA regulations Additionally, subcontractors must ensure that overhead protection for industrial tractors shall be designed and installed according to the requirements of the applicable SAE standard

6.20 STAIRWAYS AND LADDERS

Subcontractors shall ensure that construction activities consider applicable regulatory requirements and site-specific procedures concerning stairways and ladders for all tasks being performed The proper design, maintenance, and use of ladders and stairways is necessary to minimize workplace hazards Subcontractors must manage construction projects in accordance with the following

health and safety documents

- 29 CFR Part 1926 1050 - 1060 and appendices (Subpart X), Stairways and Ladders
- 1-C-18-HSP-24 01, Construction Safety and Health Requirements

At a minimum, subcontractors are responsible for the applicable requirements set forth in these documents This includes providing a training program for employees to recognize hazards related to ladders and stairways and to inform them of procedures to be followed to minimize these hazards Training records shall be provided to the contractor prior to the commencement of work activities

Subcontractors shall use ladders to provide safe access to all areas, as necessary Step ladders, straight ladders, and extension ladders shall be rated 1-A industrial heavy duty, and shall conform to appropriate safety codes (ANSI A-14 1) Aluminum ladders shall not be used in areas where there is potential for contact with energized electrical circuits or equipment A ladder inspection program shall developed and utilized for each work site, as necessary

7.0 SITE CONTROL MEASURES

7 1 SITE COMMUNICATIONS

Project personnel will have access to telephones located in the immediate area Emergency information will be communicated to building clusters or project work sites by way of the Life Safety/Disaster Warning System

7 2 WORK ZONES

The project work site will be posted as an RMRS work area and access to the area will be limited to those personnel working on the project Additional work zones required for lead, asbestos, and radiological hazards will be established in accordance with the applicable requirements and will be indicated in the AHAs

7 3 BARRICADES

Warning barricades shall be properly erected and at least 6 ft from the identified hazard The barricades are to be weighted to prevent displacement by wind Warning barricades located along or in roadways shall be equipped with operating warning lights Protective barricades shall

1 Be erected at the point of hazard

2 Meet the applicable OSHA requirements

3 Be in good repair

Approved accident prevention signs shall be used in conjunction with the barricades Subcontractors shall ensure that workplace hazards are identified by using appropriate signs, signals, and barricades Identifying workplace hazards will minimize potentially dangerous situations and reduce workplace accidents and injuries Subcontractors shall ensure that the appropriate signs, signals, and barricades are used during construction activities in accordance with the following health and safety documents

- 29 CFR Part 1926 200 - 203 (Subpart G) Signs, Signals, and Barricades
- HSP 10 01, Physical Hazards, Barricades, and Accident Prevention Signs and Tags
- 1-C18-HSP-24 01, Construction Safety and Health Requirements

At a minimum, subcontractors are responsible for the applicable requirements established in these

documents This includes ensuring that the required signs are visible at all times when work is being performed, and are removed or covered promptly when the hazards no longer exist Signs shall incorporate appropriate safety colors Subcontractors shall ensure that when signs, signals, and barricades do not provide the necessary protection on or adjacent to a highway or street, flagmen or other appropriate controls are provided

7 4 EXCAVATION AND TRENCHING

Soils Disturbance Packages will be developed by the Excavation Specialists or representative for construction activities on projects where excavation and trenching will occur The Construction Coordinator shall provide the guidance and requirements for all excavation and trenching activities The Constructor shall address, as part of the PHA, safety and health requirements for all excavations that will be more than 4 ft in depth The Constructor shall define how the excavation will be performed and inspected by the Constructor's competent person so as to eliminate or reduce potential hazards to employees

7 5 HAZARDOUS MATERIALS

All flammable or combustible liquid metal containers shall be properly labeled, approved, and in good condition Containers must also have a spring closing device and flame arrestor Flammable liquid storage cabinets shall be provided for the storage of flammable or combustible liquids in their original containers A list of hazardous materials, along with the MSDSs, shall be forwarded to Construction Management for review prior to bringing the materials onsite

7 6 HEAVY EQUIPMENT AND VEHICLES

The following construction equipment shall be inspected for compliance with safety requirements before being used on the construction site

- Cranes
- Industrial lifts and fork trucks
- Elevating and rotating work platforms
- Earth moving equipment
- Drilling rigs
- Construction vehicles
- Roadway paving and maintenance equipment
- Mobile air compressors

Construction equipment that is found to be noncompliant with safety requirements shall be repaired or removed from RFETS All safety deficiencies or violations that are noted during the inspections shall be tracked to verify that equipment is repaired or removed from RFETS All construction vehicles shall be equipped with back-up alarms The back-up alarms are to be electronic, gear actuated, and shall alarm continuously while the vehicle/equipment is in reverse motion

7 7 HOISTING AND RIGGING

All hoisting and lifting devices shall be inspected by the RMRS Safety department Certification of inspection of all equipment shall be provided to the Safety department Prior to making a lift, the hoisting and rigging checklist (RF-48040) required by HSP 12 2, *Hoisting and Rigging*, shall be completed to ensure that the lifting activity has been reviewed and properly classified A specialized rigging and lifting plan shall be developed if required

7 8 WEATHER

The subcontractor shall limit or curtail demolition activities or work immediately upon receipt of such instructions from the Construction Manager or Occupational Safety for the following conditions

- Excessive wind speeds
- Lightning
- Inclement weather

7 9 ELECTRICAL EQUIPMENT

All portable generators shall have their frames externally grounded or the generator must have been certified so that their is not a potential for circuit to frame conductivity Ground fault circuit interrupters shall be used in conjunction with temporary or permanent electrical services during all construction activities Workers shall use insulated gloves and factory-insulated tools when working on energized electrical circuits No work will be performed on energized electrical equipment without a completed Energized Equipment Permit signed by the Operations Manager or designee Electrical equipment shall be isolated and locked or tagged in accordance with HSP 2 08, *Lockout/Tagout*, prior to work being performed

Subcontractors shall address electrical safety requirements necessary for the safeguarding of employees involved in construction work Subcontractors shall ensure that only trained and qualified electrical workers are assigned to perform work on electrical equipment, components, and systems Subcontractors must ensure that the proper electrical safety requirements are used in accordance with the following health and safety documents

- 29 CFR Part 1926 400 - 449 (Subpart K) Electrical
- HSP 15 00, Electrical Safety Practices
- 1-C18-HSP-24 01, Construction Safety and Health Requirements

At a minimum, subcontractors are responsible for the applicable requirements established in these documents This includes ensuring that all personnel receive electrical training adequate for their job responsibilities Subcontractors will ensure that personnel who install, repair, or remove electrical equipment are informed or site-specific hazards so that they my follow special precautions to prevent environmental and personnel contamination Electrical equipment and circuits shall be considered energized unless they are positively determined to be de-energized by a qualified electrical worker Physical safety barriers, warning signs, and labels must be used in accordance with regulatory requirements and site procedures Portable electrical tools, equipment, and cords must be of satisfactory condition so that they do not cause harm to personnel or property

7 11 SITE SECURITY

Some construction projects are located in controlled access areas Entry into these areas are limited to personnel requiring access Tasks requiring access are routine operations, maintenance, and performing activities to support the D&D process

Personnel requiring access must have completed the required training, medical surveillance, and wear the prescribed PPE, as well as signed-in on the RWP and AHA, as applicable

8 0 MEDICAL SURVEILLANCE

Project personnel who are or may be exposed to hazardous substances or health hazards will receive hazardous waste worker medical surveillance as specified in 1910 120 (f) and 1926 65 (f)

In addition, in accordance with 29 CFR 1926 62, personnel potentially exposed to lead will receive a baseline blood test for lead and zinc protoporphyrin. Asbestos workers will conform to medical monitoring requirements as defined in 10 CFR 1926 1101 and HSP-9 09, *Safe Handling of Asbestos*

9.0 PERSONNEL PROTECTIVE EQUIPMENT PROGRAM

PPE for the project will be selected by IH&S personnel for the specific hazards to be encountered Workers will be trained in the use, maintenance, and disposal of the PPE assigned to them in accordance with applicable PPE requirements and the RFETS respiratory protection program

At a minimum, workers entering Building 123 Cluster will be required to wear

- Steel-toed safety shoes
- Eye protection with side shields
- Hard hat in posted hard hat areas
- Hand protection, as appropriate

To enter Radiological Controlled Areas or buffer areas in the 123, workers will normally be required to wear the following

- Steel-toed safety shoes
- Eye protection with side shields
- RFETS company provided long sleeve coveralls
- RFETS company provided Tyvek or cotton coveralls
- Gloves and shoe covers
- Respiratory protection as described by the AHA or RWP

As job conditions dictate, the IH&S group will evaluate the specific PPE for each particular task Evaluations will verify that the appropriate PPE is being used for the potential job hazards

When prescribing PPE, the IH&S group will consider the following factors

- Permeability, degradability, penetrability by specific agents expected for the job task(s)
- Heat/cold (thermal effects)
- Durability
- Flexibility
- Ease of decontamination
- Compatibility with other equipment
- Special conditions (fire, explosive, electrical, chemical, radiological, O_2 deficient atmospheres, etc)

10.0 DECONTAMINATION PROCEDURES

Specific decontamination procedures, as applicable and depending on the hazard, will be addressed as required by the RFETS Site RCM, Part 4, Section 541

10 1 RADIOLOGICAL

Decontamination for potential radiological contamination will be performed in accordance with the applicable procedures in the Health and Safety Practices Manual and Radiological Operating Instructions Manual and as specified in the RWP

10 2 LEAD

Decontamination of lead will be performed in accordance with 29 CFR 1926 62 (g), (h), (i), and project specific Lead Compliance Plans All AHAs for lead work will have the approval of an RMRS IH&S Industrial Hygienist

10.3 ASBESTOS

Removal of asbestos containing materials will be performed in accordance with 29 CFR 1926 1101, EPA 40 CFR 763, and the Health and Safety Practices Manual All AHAs and asbestos work plans will be approved by an RMRS IH&S Hygienist

11.0 TRAINING

11.1 PROJECTS SPECIFIC/GENERAL EMPLOYEE TRAINING

All project field personnel shall receive pre-construction safety and health orientation in accordance with section 8 1 of 1-C18-HSP-24 01, as appropriate, and receive project-specific training and general employee training regarding the following topics

- Key project personnel and chain of authority,
- Safety, health, and other known hazards present on the project,
- Use of PPE,
- Work practices,
- Engineering controls,
- Medical surveillance requirements, including recognition of symptoms and signs which might indicate over exposure to hazardous/chemical materials and heat stress
- Emergency Procedures,
- Hazard Communication
- General Employee Training
- Hearing Conservation
- Asbestos Awareness
- Nuclear Materials Handlers and Transporters
- 40 hour Hazwoper Training and 8 hour annual refresher, as necessary

- 8 hour Hazwoper Supervisor Training, as necessary

Additionally, depending on the job task, personnel may be trained in the following areas

- Asbestos Awareness
- Confined Space Entry
- Lead Awareness
- PCB Awareness
- Aerial Lift
- Fall Protection
- Scaffolding Usage
- Lockout/Tagout
- Basic Respiratory Protection
- Electrical Safety
- Glovebag Usage
- Ladder Safety
- Forklift Usage
- Hoisting Apparatus
- Proper Tool and Machine Guarding
- Welding/Cutting Operations
- Demolition
- Ergonomics

Individuals will be trained in their specific job task(s) The site-specific training shall be performed as part of pre-job briefings, AHA briefings, "tool-box" safety training, or regular safety meetings Retraining shall be conducted whenever this HASP is revised and where it impacts field conditions, new AHAs are developed or when AHAs are revised due to work conditions changing General Health and Safety Training (i e , asbestos, lead, beryllium, and radiological) will be listed in the AHA and/or RWP and will be conducted in accordance with general employee training procedures Site-specific HASP Training will be documented by the Craft Foreman, Construction Engineer, or IH&S Lead or designees

11 2 RESPIRATOR TRAINING

Employees required to wear respiratory protection must be trained and fit-tested Annual respiratory Indoctrination (computer-based training), medical evaluation, and fit-testing is required for all respirator users Personnel shall be trained to a level appropriate for the type of respiratory protection they are required to use Respirator qualification and usage for asbestos, radiological, or lead will follow the specific requirements for that hazard in regards to fit test frequency, medical qualifications, etc

11.3 LEAD WORKER TRAINING

Employees potentially exposed to lead must receive Lead Worker Awareness training

11 4 ASBESTOS TRAINING

Employees working in areas where asbestos is present are required to have Asbestos Awareness Training Employees likely to disturb asbestos containing materials in the course of work, are required to have Asbestos Worker Training in accordance with HSP 9 09, *Safe Handling of Asbestos*, and completed training in accordance with OSHA 1926 1101

12.0 EMERGENCY RESPONSE

12 1 PRE-EMERGENCY PLANNING

All field project personnel will be informed of the site emergency response procedures and the Building 123 Emergency Plan, (BEPLAN-14 123) This information will be provided prior to personnel working onsite

12.2 COMMUNICATION

All incidents requiring emergency response shall be called-in to extension 2911 The RMRS Project Manager must also be notified at extension 7088

12.3 SAFE DISTANCES AND PLACES OF REFUGE

In the event of an incident requiring emergency evacuation of the facility, all personnel will evacuate, follow life safety/disaster warning instructions, and assemble at the designated 123 assembly areas

12.4 EVACUATION ROUTES

Evacuation routes will be posted at various locations within the building(s) and project personnel will be informed of the routes during pre-evolution briefings As the building layout changes due to decommissioning activities, project personnel will be briefed on the revised primary and secondary evacuation routes

12.5 EMERGENCY MEDICAL TREATMENT AND FIRST AID

Emergency medical assistance can be obtained by calling extension 2911 by phone Site Emergency Response personnel will determine if off-site medical transportation and assistance is required Individuals requiring non-emergency medical treatment or first aid will be transported to the Occupational Health Clinic, Building 122 for treatment The Project Manager shall be immediately notified of any such incidents

12.6 PPE AND EMERGENCY EQUIPMENT

The project will maintain PPE necessary to perform work as outlined in the AHAs Additionally, fire extinguishers will be available at the project site The RFETS Fire Department and Hazardous Materials Team maintains a supply of additional emergency equipment

13.0 SPILL RESPONSE

All spill response will be performed in accordance with HSP 21 04, *Emergency Response and Spill Control* Project personnel will respond only to incidental spills as defined in HSP 21 04 All other spills of radioactive material or hazardous materials must be reported to extension 2911, and the project area evacuated

14.0 POST CONSTRUCTION ACTIVITIES

The Subcontractor shall submit a final report to the Construction Coordinator detailing their safety and health performance during the construction activity or project The final report shall be in the form of self-assessment and will evaluate the safety and health performance of all subcontractors, lower-tier subcontractors, and vendors The final report shall include the following

1 A copy of the Daily Log maintained by the designated Safety and Health representative

2 Copies of all accident and incident investigation reports

3 Total number of first-aid cases

4 Copies of the OSHA 200 Logs for all project personnel

5 Final totals of employee hours worked for all project personnel

6 Copies of all OSHA, DOE, and RFETS safety and health training records, safety meeting reports, and attendance roster associated with the performance of the

construction project or activity

The Construction Coordinator shall provide an independent evaluation of the safety and health performance of the Subcontractor to the following individuals or departments within 10 working days of the completion of the project

1 Construction Manager

2 Project Manager

3 Occupational Safety

15.0 RECORDKEEPING REQUIREMENTS

Any individual experiencing an injury or illness shall report to the Contractor's Occupational Health department for evaluation All accident and incident investigation reports shall be completed on DOE Form 5484 X, Individual Accident/Incident Report of the Contract Document, Section 01700

Note: RFETS requires that all occupational injuries or illnesses, motor vehicle accidents resulting in more than $500.00 damage, personal injury, property damage incidents, or fires resulting in $1,000.00 or more in damage be investigated and reported

A properly completed Individual Accident/Incident Report shall be submitted to the Construction Coordinator within 24 hours of the accident or incident The following information shall be maintained and provided to the Construction Coordinator by the third working day of each month or at the completion of the construction activity, whichever comes first

1 Requested information pertinent to first-aid cases

2 Employee hours worked

3 OSHA incidence rates for the construction activity or project in progress or completed

The same statistical information shall be submitted for any construction subcontractor, lower-tier subcontractor, and vendor who has performed work on the construction activity or project Any subcontractor performing construction at RFETS shall maintain and make available for review an up-to-date OSHA 200 Log pertinent to construction activities at RFETS

The following records shall be maintained for subcontractors, lower-tier subcontractors, and vendors during the performance of the construction project or activity

1 First-aid cases

2 Employee hours worked

3 OSHA 200 Logs

4 OSHA incident rates

APPENDIX 1

ACTIVITY HAZARD ANALYSIS

Appendix 1

ACTIVITY HAZARD ANALYSIS

Activity Hazard Analysis Number: _____

Building/Room: _____

Job Title/Project: _____

Activity/Job Description: _____

_____

Step	Potential Hazard	Protective Control Measures

IH&S Training Required	Safety/Special Equipment/Tools Required	Other Requirements Or Hold Points

JOB SUPERVISOR CONCURRENCE: _____

IH&S CONCURRENCE: _____

IH&S CONCURRENCE: _____